Complete Summary

GUIDELINE TITLE

(1) Care and maintenance to reduce vascular access complications. (2) Care and maintenance to reduce vascular access complications 2008 supplement.

BIBLIOGRAPHIC SOURCE(S)

Registered Nurses' Association of Ontario (RNAO). Care and maintenance to reduce vascular access complications. guideline supplement. Toronto (ON): Registered Nurses' Association of Ontario (RNAO); 2008. 7 p. [21 references]

Registered Nurses' Association of Ontario (RNAO). Care and maintenance to reduce vascular access complications. Toronto (ON): Registered Nurses' Association of Ontario (RNAO); 2005 Apr. 88 p. [112 references]

GUIDELINE STATUS

This is the current release of the guideline.

** REGULATORY ALERT **

FDA WARNING/REGULATORY ALERT

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

- February 28, 2008, Heparin Sodium Injection: The U.S. Food and Drug Administration (FDA) informed the public that Baxter Healthcare Corporation has voluntarily recalled all of their multi-dose and single-use vials of heparin sodium for injection and their heparin lock flush solutions. Alternate heparin manufacturers are expected to be able to increase heparin production sufficiently to supply the U.S. market. There have been reports of serious adverse events including allergic or hypersensitivity-type reactions, with symptoms of oral swelling, nausea, vomiting, sweating, shortness of breath, and cases of severe hypotension.

COMPLETE SUMMARY CONTENT

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SCOPE

DISEASE/CONDITION(S)

Vascular access complications

GUIDELINE CATEGORY

Management
Prevention

CLINICAL SPECIALTY

Cardiology
Critical Care
Emergency Medicine
Geriatrics
Hematology
Nursing
Oncology
Pediatrics

INTENDED USERS

Advanced Practice Nurses
Nurses

GUIDELINE OBJECTIVE(S)

- To update the April 2005 Nursing Best Practice Guidelines for Care and Maintenance to Reduce Vascular Assess Complications based on new evidence obtained since the originally published guidelines
- To provide evidence-based support for nurses related to the care and maintenance of vascular access devices, client education, and safety

Specific clinical questions to be addressed include:

- How can the risk of complications be minimized through appropriate care and maintenance of vascular access devices?
- What strategies should be used for client and staff education to address the care and maintenance of vascular access devices?

TARGET POPULATION

Patient with central venous access devices (CVAD) and peripheral venous access devices (PVAD)

Note: This guideline does *not* include recommendations related to the care of clients requiring infusion therapy through the following devices: arterial lines, hemodialysis catheters, pulmonary artery lines, pheresis lines, epidural catheters, pressure monitoring devices, umbilical vein, femoral catheters, and/or intraosseous lines.

INTERVENTIONS AND PRACTICES CONSIDERED

Prevention

1. Ensure proper selection of peripheral insertion site
2. Ensure the use of routine practices and precautions to prevent the spread of infection including hand hygiene, assessment of client risk factors, screening, hazard or risk reduction, and application of personal protective equipment (PPE)
3. Perform catheter site care using aseptic techniques
4. Confirm central venous access device (CVAD) tip placement prior to therapy delivery
5. Consider type of dressing, frequency of dressing change, and client choice, tolerance and lifestyle when selecting and changing VAD dressings
6. Stabilize VAD with tape, sutures, securement device
7. Maintain patency using locking and flushing techniques
8. Consider risk factors including client, device, and infusion factors
9. Assess catheter occlusion
10. Minimize CVAD access
11. Change all add-on devices at least every 72 hours

Management

1. Document condition of VAD
2. Provide client education

MAJOR OUTCOMES CONSIDERED

- Rates of completion of therapy
- Complication rates
- Client satisfaction

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Searches of Electronic Databases
Searches of Unpublished Data

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

April 2005 Guideline

A database search for existing infusion therapy guidelines was conducted by a university health sciences library. After the scope of the guideline was established, a search of the MEDLINE, Embase, and CINAHL databases for guidelines and articles published from January 1996 to November 2004 was conducted using the following search terms: "catheterization, peripheral/ or catheterization, peripheral central venous," "central venous catheters/or peripherally inserted central catheters," "nursing role," "nursing care," "vascular access devices/or catheters," "vascular/or vascular access devices," "implantable," "catheter-related complications," "equipment contamination," "equipment safety," "catheter care, vascular," "catheter occlusion," "catheter-related infections," "nursing assessment," "practice guideline(s)," "clinical practice guideline(s)," "standards," "consensus statement(s)," "consensus," "evidence based guidelines," and "best practice guidelines." This search generated numerous abstracts which were then reviewed by a masters prepared Research Assistant assigned to the project for the purposes of selecting articles based on inclusion criteria that related to the clinical questions. The Research Assistant conducted a quality appraisal of the selected articles and summarized the studies according to the following:

- Study type
- Sample (number of subjects/characteristics)
- Intervention used in the study
- Measures used in the study
- Findings
- Limitations

This summary was distributed to the panel.

One individual searched an established list of 53 Web sites for content related to the topic area. This list of sites, reviewed and updated in July 2003, was compiled based on existing knowledge of evidence-based practice Web sites, known guideline developers and recommendations from the literature. Presence or absence of guidelines was noted for each site searched as well as date searched. The Web sites at times did not house a guideline but directed to another Web site or source for guideline retrieval. Guidelines were either downloaded if full versions were available or were ordered by phone/e-mail.

A Web site search for existing guidelines was conducted via the search engine "Google", using the search terms identified above. One individual conducted this search, noting the search term results, the Websites reviewed, date, and a summary of the findings. The search results were further critiqued by a second individual who identified guidelines and literature not previously retrieved.

Additionally, panel members were already in possession of a few of the identified guidelines. In some instances, a guideline was identified by panel members and not found through the previous search strategies. These were guidelines that were developed by local groups or specific professional associations.

This above search method revealed nine guidelines, several systematic reviews, and numerous articles related to care and maintenance of vascular access devices.

The final step in determining whether the clinical practice guideline would be critically appraised was to have two individuals screen the guidelines based on the following criteria. These criteria were determined by panel consensus:

- Guideline was in English
- Guideline was dated no earlier than 2000
- Guideline was strictly about the topic area
- Guideline was evidence based
- Guideline was available and accessible for retrieval

The results of the search strategy and the decision to critically appraise identified guidelines are itemized in the original guideline document. Nine guidelines met the screening criteria and were critically appraised using the *Appraisal of Guidelines for Research and Evaluation (AGREE) Instrument* (AGREE Collaboration, 2001). This process yielded a decision to work primarily with five existing guidelines.

2008 Supplement

Review of Existing Guidelines

One individual searched an established list of websites for published guidelines and other relevant content. This list was compiled based on existing knowledge of evidence-based practice websites and recommendations from the literature. Six international guidelines were critically appraised using the *Appraisal of Guidelines for Research and Evaluation* Instrument (AGREE, 2001). From this appraisal, two guidelines were identified to inform the review process and were circulated to all panel members.

Literature Review

Concurrent with the review of existing guidelines, a search for recent literature relevant to the scope of the guideline was conducted with guidance from the Review Chair. The search of electronic databases, including CINAHL, Medline and EMBASE, was conducted by a health sciences librarian. A Master's prepared nurse completed the inclusion/exclusion review, quality appraisal and data extraction of the retrieved studies, and the summary of the literature findings. The comprehensive data tables and reference lists were provided to all panel members.

A summary of the evidence review is provided in the *Review Process Flow Chart* in the original guideline supplement document.

NUMBER OF SOURCE DOCUMENTS

May 2005 Guideline

Following the appraisal process, the guideline development panel identified seven guidelines to develop the recommendations cited in the guideline.

2008 Supplement

Two guidelines and 18 studies were identified for review.

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

Ia Evidence obtained from meta-analysis or systematic review of randomized controlled trials

Ib Evidence obtained from at least one randomized controlled trial

IIa Evidence obtained from at least one well-designed controlled study without randomization

IIb Evidence obtained from at least one other type of well-designed quasi-experimental study without randomization

III Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies, and case studies

IV Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

April 2005 Guideline

In June of 2004, a panel of nurses with expertise in vascular access from institutional, community, educational, and industry settings (including vendor companies) was convened under the auspices of the Registered Nurses' Association of Ontario (RNAO). At the outset, the panel established the scope of

the guideline through a process of discussion and consensus. It was decided to focus on the care and maintenance of vascular access in order to reduce complications for the client.

The panel members divided into subgroups to undergo specific activities using the short-listed guidelines, other literature, and additional resources for the purpose of drafting recommendations. This process yielded a draft set of recommendations. The panel members as a whole reviewed the recommendations, discussed gaps, available evidence, and came to consensus on a draft guideline.

2008 Supplement

As part of its commitment to ensure consistency with the best available evidence, the Registered Nurses' Association of Ontario (RNAO) has established a monitoring and review process which involves a full review of each guideline every 3 years.

A panel of specialists was assembled for this review, comprised of members from the original development panels of the *Assessment and Device Selection for Vascular Access* and *Care and Maintenance to Reduce Vascular Access Complications* guidelines, as well as other recommended individuals with particular expertise in this practice area. A structured evidence review based on the scope of the original guideline was conducted to capture the relevant literature. Initial findings regarding the impact of the current evidence base on the original guideline were summarized for the review panel.

The review panel members were given a mandate to review the original guideline in light of the new evidence, specifically to ensure the validity, appropriateness and safety of the guideline recommendations as published in 2005. In December 2007, the panel met to achieve consensus on the impact of this new evidence on the existing recommendations.

After a review of the current evidence, no substantive changes were made to the recommendations; however, several inaccuracies were noted in the original publication, and are addressed in this review document. Additional resources were also identified and are listed in Appendix A in the 2008 guideline supplement.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

April 2005 Guideline

This draft was submitted to a set of external stakeholders for review and feedback. An acknowledgement of these reviewers is provided at the front of the original guideline document. Stakeholders represented various health care disciplines, clients and families, as well as professional associations. External stakeholders were provided with specific questions for comment, as well as the opportunity to give overall feedback and general impressions. The results were compiled and reviewed by the development panel. Discussion and consensus resulted in revisions to the draft document prior to publication.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Note from the National Guideline Clearinghouse (NGC) and the Registered Nurses' Association of Ontario (RNAO)*: In December 2007, the RNAO) reviewed the current practice recommendations for this topic. A review of the most recent studies and relevant guidelines published since the development of the original guideline does not support changes to the recommendations. However, the panel has identified several inaccuracies in the original guideline as well as several gaps in the available evidence, which are outlined below (marked as "updated in 2008").*

The levels of evidence supporting the recommendations (Ia, Ib, IIa, IIb, III, IV) are defined at the end of the "Major Recommendations" field.

Practice Recommendations

Site Selection: Peripheral

Recommendation 1.0

Nurses will select a peripheral insertion site appropriate for the required therapy and with the least risk of complication.

(Level of Evidence = IV)

Site and Catheter Care: Safety/Infection Prevention Control

Recommendation 2.0

Nurses will prevent the spread of infection by following routine practices and using additional precautions.

(Level of Evidence = IV)

Skin Antisepsis

Recommendation 3.0 (Updated in 2008)

Nurses will consider the following factors when performing catheter site care using aseptic technique:

- Catheter material (composition)
- Antiseptic solution
- Client's tolerance (skin integrity, allergies, pain, sensitivity, and skin reaction)

(Level of Evidence = IV)

Although the evidence supports the original recommendation, the panel would like to include an alert:

Aseptic technique must include choice of solution, use of friction, and adequate contact time in order to be considered an effective use of technique. Please consult your institutional policy **or** infection control policies for more details.

Tip Placement

Recommendation 4.0 (Updated in 2008)

Nurses will not use the central venous access device (CVAD) until tip placement has been confirmed.

(Level of Evidence = IV)

Although the evidence supports the original recommendation, the panel would like to include an alert:

Anatomical tip location must be documented by a radiologist/attending physician following insertion, and this documentation must be accessible to all the client's health care providers throughout the continuum of care.

Please note: the original discussion of the evidence referred to an illustration (Appendix D of the original guideline document) which is inaccurate; please refer to Appendix B of the 2008 supplement for a revised visual representation of correct tip placement.

Dressings

Recommendation 5.0

Nurses will consider the following factors when selecting and changing venous access device (VAD) dressings:

- Type of dressing
- Frequency of dressing changes
- Client's choice, tolerance, and lifestyle

(Level of Evidence = IV)

Securement

Recommendation 6.0

Nurses must stabilize the VAD in order to:

- Promote assessment and monitoring of the vascular access site
- Facilitate delivery of prescribed therapy
- Prevent dislodgement, migration, or catheter damage

(Level of Evidence = III)

Patency/Flushing/Locking

Recommendation 7.0 (Updated in 2008)

Nurses will maintain catheter patency using flushing and locking techniques.

(Level of Evidence = IV)

See Appendix C of the 2008 supplement for detailed and updated flushing and locking interventions.

Recommendation 8.0

Nurses will know what client factors, device characteristics, and infusate factors can contribute to catheter occlusion in order to ensure catheter patency for the duration of the therapy.

(Level of Evidence = IV)

Occlusion

Recommendation 9.0

Nurses will assess and evaluate vascular access devices for occlusion in order to facilitate treatment and improve client outcomes.

(Level of Evidence = IV)

Blood Withdrawal

Recommendation 10.0

Nurses will minimize accessing the central venous access device (CVAD) in order to reduce the risk of infection and nosocomial blood loss.

(Level of Evidence = IV)

Add-Ons

Recommendation 11.0

Nurses will change all add-on devices a minimum of every 72 hours.

(Level of Evidence = IV)

Documentation

Recommendation 12.0

Nurses will document the condition of vascular access devices including:

- The insertion process
- Site assessment
- Functionality

(Level of Evidence = III)

Client Education

Recommendation 13.0

Nurses will help clients to attain the highest level of independence through client education.

(Level of Evidence = IV)

Education Recommendations

Recommendation 14.0

The principles and practice of infusion therapy should be included in the basic education curriculum, be available as continuing education, be provided in orientation to new employees, and be made available through continuing professional development opportunities.

(Level of Evidence = IV)

Recommendation 15.0

Schools of Nursing will include Registered Nurses' Association of Ontario (RNAO) best practice guidelines *Assessment and Device Selection for Vascular Access* and *Care and Maintenance to Reduce Vascular Access Complications* as reference material for core curricula.

(Level of Evidence = IV)

Organization & Policy Recommendations

Recommendation 16.0

Health care organizations will have policies that address components of vascular access therapy in order to ensure positive client outcomes.

(Level of Evidence = IV)

Recommendation 17.0

Health care organizations, in collaboration with their infection control teams, will monitor complications of infusion therapy and use data to employ risk reduction strategies.

(Level of Evidence = IV)

Recommendation 18.0

Health care organizations will implement the use of safety engineered devices and equipment to reduce the nurse's risk of sharps injuries that can lead to blood borne diseases. The organization's risk management program will monitor assessment of these practices and incidents.

(Level of Evidence = III)

Recommendation 19.0 (Updated in 2008)

Health care organizations have access to infusion therapy nursing expertise to support optimal vascular access outcomes.

(Level of Evidence = III)

Note: Although the evidence supports the original recommendation, the panel would like to emphasize the importance of health care organizations having access to credentialed infusion therapy nurses to support optimal vascular access outcomes.

Recommendation 20.0

Nursing best practice guidelines can be successfully implemented only where there are adequate planning, resources, organizational and administrative support, as well as appropriate facilitation. Organizations may wish to develop a plan for implementation that includes:

- An assessment of organizational readiness and barriers to education.
- Involvement of all members (whether in a direct or indirect supportive function) who will contribute to the implementation process.
- Dedication of a qualified individual to provide the support needed for the education and implementation process.
- Ongoing opportunities for discussion and education to reinforce the importance of best practices.
- Opportunities for reflection on personal and organizational experience in implementing guidelines.

In this regard, RNAO (through a panel of nurses, researchers, and administrators) has developed the *Toolkit: Implementation of Clinical Practice Guidelines* based on available evidence, theoretical perspectives, and consensus. The Toolkit is recommended for guiding the implementation of the RNAO guideline *Care and Maintenance to Reduce Vascular Access Complications*.

(Level of Evidence = IV)

Definitions:

Levels of Evidence

Ia Evidence obtained from meta-analysis or systematic review of randomized controlled trials

Ib Evidence obtained from at least one randomized controlled trial

IIa Evidence obtained from at least one well-designed controlled study without randomization

IIb Evidence obtained from at least one other type of well-designed quasi-experimental study without randomization

III Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies, and case studies

IV Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities

CLINICAL ALGORITHM(S)

An algorithm is provided in the original guideline document for troubleshooting catheter occlusion.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of evidence is identified and graded for each recommendation (see "Major Recommendations" field).

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- The desired clinical goal is positive client outcomes as evidenced by completion of therapy, absence of complications, and client satisfaction with delivery of care.

- Nurses, other healthcare professionals, and administrators who are leading and facilitating practice changes will find this document valuable for the development of policies, procedures, protocols, education programs, assessments, and documentation tools.

POTENTIAL HARMS

- Antiseptics should remain on the insertion site and be allowed to air dry before catheter insertion and/or dressing change to prevent skin breakdown.
- Excessive flushing pressure can cause clots to be dislodged, catheter separation, and/or catheter rupture. In order to reduce the potential of excessive pressure, it is generally recommended that a 10 mL (or larger) syringe be used for flushing.
- Heparin has been associated with iatrogenic hemorrhage (a life-threatening reaction to heparin), heparin induced thrombocytopenia (HIT), drug interactions and inaccurate blood results.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- This nursing best practice guideline is a comprehensive document providing resources necessary for the support of evidence-based nursing practice. The document needs to be reviewed and applied, based on the specific needs of the organization or practice setting/environment, as well as the needs and wishes of the client. Guidelines should not be applied in a "cookbook" fashion but used as a tool to assist in decision making for individualized client care, as well as ensuring that appropriate structures and supports are in place to provide the best possible care.
- These best practice guidelines are related only to nursing practice and not intended to take into account fiscal efficiencies. These guidelines are not binding for nurses and their use should be flexible to accommodate client/family wishes and local circumstances. They neither constitute a liability nor discharge from liability. While every effort has been made to ensure the accuracy of the contents at the time of publication, neither the authors nor the Registered Nurses' Association of Ontario (RNAO) give any guarantee as to the accuracy of the information contained in them nor accept any liability, with respect to loss, damage, injury or expense arising from any such errors or omission in the contents of this work. Any reference throughout the document to specific pharmaceutical products as examples does not imply endorsement of any of these products.
- It is acknowledged that the individual competencies of nurses varies between nurses and across categories of nursing professionals (registered practical nurses [RPNs] and registered nurses [RNs]) and are based on knowledge, skills, attitudes, critical analysis and decision making which are enhanced over time by experience and education. It is expected that individual nurses will perform only those aspects of care and maintenance for vascular access devices for which they have received appropriate education and have experience. It is expected that nurses will seek appropriate consultation in instances where the client's care needs surpass the nurse's ability to act independently. It is acknowledged that effective healthcare depends on a coordinated health care team approach incorporating ongoing communication

between health professionals and clients, ever mindful of the personal choices and unique needs of each individual client.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Best practice guidelines can only be successfully implemented if there are: adequate planning, resources, organizational and administrative support, as well as appropriate facilitation. Registered Nurses' Association of Ontario (RNAO), through a panel of nurses, researchers and administrators, has developed the *Toolkit: Implementation of Clinical Practice Guidelines* based on available evidence, theoretical perspectives, and consensus. The *Toolkit* is recommended for guiding the implementation of any clinical practice guideline in a healthcare organization.

The *Toolkit* provides step-by-step directions to individuals and groups involved in planning, coordinating, and facilitating the guideline implementation. Specifically, the *Toolkit* addresses the following key steps in implementing a guideline:

1. Identifying a well-developed, evidence-based clinical practice guideline
2. Identification, assessment and engagement of stakeholders
3. Assessment of environmental readiness for guideline implementation
4. Identifying and planning evidence-based implementation strategies
5. Planning and implementing evaluation
6. Identifying and securing required resources for implementation

Implementing guidelines in practice that result in successful practice changes and positive clinical impact is a complex undertaking. The *Toolkit* is one key resource for managing this process.

Evaluation/Monitoring

Organizations implementing the recommendations in this nursing best practice guideline are recommended to consider how the implementation and its impact will be monitored and evaluated. A table in the original guideline document, based on a framework outlined in the RNAO *Toolkit: Implementation of Clinical Practice Guidelines* (2002), illustrates some indicators for monitoring and evaluation.

Implementation Strategies

The RNAO and the guideline development panel have compiled a list of implementation strategies to assist healthcare organizations or healthcare disciplines who are interested in implementing this guideline. See the original guideline document for a summary of strategies.

IMPLEMENTATION TOOLS

Chart Documentation/Checklists/Forms
Clinical Algorithm
Foreign Language Translations

Patient Resources
Quick Reference Guides/Physician Guides
Resources
Staff Training/Competency Material
Tool Kits

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Living with Illness
Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Registered Nurses' Association of Ontario (RNAO). Care and maintenance to reduce vascular access complications. guideline supplement. Toronto (ON): Registered Nurses' Association of Ontario (RNAO); 2008. 7 p. [21 references]

Registered Nurses' Association of Ontario (RNAO). Care and maintenance to reduce vascular access complications. Toronto (ON): Registered Nurses' Association of Ontario (RNAO); 2005 Apr. 88 p. [112 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2005 Apr (addendum released 2008)

GUIDELINE DEVELOPER(S)

Registered Nurses' Association of Ontario - Professional Association

SOURCE(S) OF FUNDING

Funding was provided by the Ontario Ministry of Health and Long-Term Care.

GUIDELINE COMMITTEE

Not stated

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

The Registered Nurses' Association of Ontario (RNAO) received funding from the Ministry of Health and Long-Term Care (MOHLTC). This guideline was developed by a panel of nurses and researchers convened by the RNAO and conducting its work independent of any bias or influence from the MOHLTC.

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

2005 Guideline

Electronic copies: Available in Portable Document Format (PDF) from the Registered Nurses' Association of Ontario (RNAO) Web site.

2008 Supplement

Electronic copies: Available in Portable Document Format (PDF) from the RNAO Web site.

Print copies: Available from the Registered Nurses' Association of Ontario (RNAO), Nursing Best Practice Guidelines Project, 158 Pearl Street, Toronto, Ontario M5H 1L3.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Summary of recommendations. Care and maintenance to reduce vascular access complications. Toronto (ON): Registered Nurses' Association of Ontario (RNAO); 3 p. Electronic copies: Available in Portable Document Format (PDF) from the Registered Nurses' Association of Ontario (RNAO) Web site.

- Toolkit: implementation of clinical practice guidelines. Toronto (ON): Registered Nurses' Association of Ontario (RNAO); 2002 Mar. 91 p. Available in Portable Document Format (PDF) from the RNAO Web site.

  Print copies: Available from the Registered Nurses' Association of Ontario (RNAO), Nursing Best Practice Guidelines Project, 158 Pearl Street, Toronto, Ontario M5H 1L3.

  The following is also available:

  - e-learning: Caring for your patients with intravenous therapy. Toronto (ON): Registered Nurses' Association of Ontario (RNAO). Available from the RNAO Web site.

  A variety of implementation tools, including a data collection tool for central venous devices and sample patient education, are available in the original guideline document.

PATIENT RESOURCES

The following is available:

- Health education fact sheet. You and your IV. Toronto (ON): Registered Nurses' Association of Ontario (RNAO); 2006 Nov. 2 p.

Electronic copies: Available in Portable Document Format (PDF) from the RNAO Web site (French and English).

Print copies: Available from the Registered Nurses' Association of Ontario (RNAO), Nursing Best Practice Guidelines Project, 158 Pearl Street, Toronto, Ontario M5H 1L3.

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC STATUS

This NGC summary was completed by ECRI on July 12, 2005. The information was verified by the guideline developer on July 18, 2005. This summary was updated by ECRI Institute on June 22, 2007 following the U.S. Food and Drug Administration (FDA) advisory on heparin sodium injection. This summary was updated by ECRI Institute on March 14, 2008 following the updated FDA advisory on heparin sodium injection. This NGC summary was updated by ECRI Institute on October 30, 2008. The updated information was verified by the guideline developer on November 14, 2008.

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Date Modified: 12/1/2008


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